

**REMARKS:**

This application has been carefully reviewed in light of the Office Action dated September 8, 2005. Claims 1-10 remain in the application. Claims 1 and 10 are the independent claims currently under consideration. Claims 1, 5, 6 and 10 have been amended herein. Reconsideration and further examination are respectfully requested.

Initially, Claims 1, 5, 6 and 10 have been amended to correct minor typographical errors, and to place these claims in better form. No new matter is believed to have been added with these amendments.

Claims 1-8 and 10 were rejected under 35 U.S.C. § 103(a) over the publication entitled "All-Reflective Phased Array Imaging Telescopes" ("Stuhlinger") in view of U.S. Patent No. 4,953,964 ("Anafi"); and Claim 9 was rejected under 35 U.S.C. § 103(a) over Stuhlinger in view of Anafi and further in view of U.S. Patent No. 5,905,591 ("Duncan").

The present invention concerns a multi-aperture high-fill-factor telescope. With reference to particular claim language, amended independent Claim 1 is directed to a multi-aperture high-fill-factor telescope having a plurality of sub-aperture telescopes, each sub-aperture telescope being configured to collect electromagnetic radiation from a scene and including first, second, third, and fourth powered mirrors. The multi-aperture high-fill-factor telescope further includes a set of combiner optics configured to combine electromagnetic radiation collected by the sub-aperture telescopes to form an image of the scene and a plurality of sets of relay optics. The sets of relay optics are respectively associated with the sub-aperture telescopes, and each set of relay optics includes a first flat fold mirror, a trombone mirror pair, and a last flat fold mirror, wherein the last flat fold mirrors are disposed within about a beam diameter of respective exit pupils from the respective exit pupils of the sub-aperture telescopes.

Amended independent Claim 10 is directed to a multi-aperture high-fill-factor telescope having a plurality of sub-aperture telescopes, each sub-aperture telescope including at least first, second, third, and fourth powered mirrors and an exit pupil disposed optically remote from an associated sub-aperture telescope. The multi-aperture high-fill-factor telescope further includes a plurality of sets of relay optics disposed optically downstream from the plurality of sub-aperture telescopes. Each set of relay optics including a first flat fold mirror, a trombone mirror pair, and a last flat fold mirror. Each last flat fold mirror is disposed within about a beam diameter of an associated exit pupil from the associated exit pupil. The multi-aperture high-fill-factor telescope further includes a combiner telescope disposed optically downstream from the sets of relay optics.

The applied references are not seen to disclose or suggest the features of the present invention, particularly with respect to at least the feature of a last flat fold mirror being disposed within about a beam diameter of an associated or respective exit pupil from the associated or respective exit pupil.

Stuhlinger is seen to be generally directed to an all-reflective phased array imaging telescope. Specifically, Stuhlinger discloses a telescope including an array of afocal sub-telescopes, a beam combination telescope and a series of fold mirrors for directing the sub-telescope beams into the beam combination telescope. In Figure 2 of Stuhlinger, a real exit pupil is possibly illustrated by a line in the radial position between the combiner and the collectors, at a location where an exit pupil would normally be located in this type of system, however, this is not clear from the reference itself. Even assuming, *arguendo*, that the line indicates a real exit pupil, there is no flat fold mirror disposed within a beam diameter of the exit pupil from the exit pupil. The Office action indicated that the beam diameter of Stuhlinger is 3.5 meters. Upon examination of Figure 2, however, Stuhlinger is understood to disclose at most sub-telescopes with aperture diameters of 3.5 meters,

whereas the beam diameter of the *exit pupil* is several orders of magnitude less in size. Assuming, *arguendo*, that the aforementioned line indicates the position of a real exit pupil, no flat fold mirror is disposed within less than about three or four beam diameters of the associated or respective exit pupil from the associated or respective exit pupil.

Accordingly, Stuhlinger is not seen to disclose, teach or suggest the combination of features of amended independent Claims 1 and 10, particularly the feature of a last flat fold mirror being disposed within about a beam diameter of an associated or respective exit pupil from the associated or respective exit pupil.

Anafi is not seen to remedy any of the foregoing deficiencies of Stuhlinger. Anafi is seen to be generally directed to a phase array optical telescope having several optical trains. Specifically, Anafi discloses a phase array optical telescope in which the spacing between individual optical trains, the optical path difference between the trains and the relative location of the image planes of the optical trains are adjusted to improve the field of view of the phased array telescope. Anafi, however, is not seen anywhere to disclose, teach or suggest a last flat fold mirror being disposed within about a beam diameter of an associated or respective exit pupil from the associated or respective exit pupil.

Duncan, which was cited in the rejection of certain dependent claims, is not seen to remedy any of the foregoing deficiencies of Stuhlinger or Anafi, as it is not seen anywhere to disclose, teach or suggest a last flat fold mirror being disposed within about a beam diameter of an associated or respective exit pupil from the associated or respective exit pupil.

Accordingly, none of the applied references, either alone or in combination, are seen to disclose, teach or suggest the combination of features of amended independent Claims 1 and 10,

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particularly the feature of a last flat fold mirror being disposed within about a beam diameter of an associated or respective exit pupil from the associated or respective exit pupil.

The other claims currently under consideration in the application are dependent from the independent claims discussed above and therefore are believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

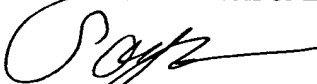
In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants also respectfully request the attorney docket number be changed from "040092-012310US" to "070602-0487."

Applicants' undersigned attorney may be contacted at the address and telephone number set forth below.

Respectfully submitted,

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